

**FY00 Defense Environmental
Security Awards
Pollution Prevention
Non-Industrial Installation
Fort Eustis, Virginia**

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INTRODUCTION

LOCATION. Fort Eustis, part of the Army's Training and Doctrine Command (TRADOC), is located in southern Virginia near Newport News on the James River, a major tributary of the Chesapeake Bay. Fort Story is located at Cape Henry, north of Virginia Beach.

POPULATION AND SIZE. Fort Eustis' 8,228 acres and Fort Story's 1,451 acres support more than 18,000 military and civilian personnel.



MISSION. Fort Eustis and its sub-installation, Fort Story, are homes to the U.S. Army Transportation Center, NCO Academy, the U.S. Army Transportation and Aviation Logistics Schools, 8th

Transportation Brigade, Joint Strategic Deployment Training Center, and the Forces Command 7th Transportation Group (Composite). Here, officers and enlisted soldiers (active duty and reserve) receive classroom education and on-the-job training in all modes of transportation, aviation maintenance, logistics, deployment doctrine, and research.

BACKGROUND

CHALLENGES. Integrating environmental management into mission readiness continues as a major challenge. It is critical to ensure that the warfighters/peacekeepers and the environmental managers understand each other's missions to achieve optimal effectiveness for everyone. The pollution prevention (P2) staff maintains an open dialogue through briefings, training, an up-to-date website, and on-site visits to meet this challenge. Fort Eustis is home of the 7th Transportation Group, one of the most frequently deployed units within the Army. These numerous deployments and the continuous rotation of soldiers test the ability of the P2 staff to retain a trained core of environmentally knowledgeable military personnel.

Forts Eustis and Story are located within the sensitive Chesapeake Bay watershed area - a drainage basin covering 64,000 square miles.

The Chesapeake Bay is the nation's largest estuary and the first to be targeted by Congress for restoration as a single ecosystem.

The potential for Bay impact is tremendous. Fort Eustis has more than 2,000 acres of tidal wetlands, which serve as a habitat for wildlife and help filter pollutants before reaching the Bay. It also has twelve miles of shoreline providing a habitat for a multitude of migratory birds and is home to two of 30 bald eagle nests on the James River. Much of this shoreline encompasses training areas and a major port berthing more than 60 vessels. Other installation operations with environmental impact include 469 air emission sources, 468 fuel storage tanks, including two 30,000-gallon tanks at Felker Army Airfield and 89 stormwater outfalls. Fort Story serves as the scene of numerous Joint-Logistics-Over-the-Shore exercises, which impact the environmentally sensitive dunes that protect the shoreline from erosion. These exercises test the capability of over-the-shore petroleum and equipment transfer.

ORGANIZATION, STAFFING AND FUNDING. The P2 Branch is part of the Environmental and Natural Resources Division (ENRD) of the Directorate of Public Works. ENRD's 15 government personnel, 3 contractors, and 2 Oak Ridge Institute for Science and Education interns effectively manage programs that include hazardous materials, hazardous wastes, solid wastes, spill response and prevention, training, affirmative procurement, and toxic substances. The P2 program is notable for its teamwork, diversity, and integration with mission.

The P2 program received a positive finding in the Army's 1999 Environmental Compliance Assessment System visit.

Funding sources for P2 include the Operations and Maintenance Account, the P2 Investment Fund, and BOLD Grant, a TRADOC program that encourages new ways of doing business with a favorable return on investment.

<u>Regulation/EO</u>	<u>Supporting Fort Eustis Plan</u>
RCRA	<ul style="list-style-type: none"> ▪ Hazardous Material and Waste Management SOP ▪ Integrated Solid Waste Management Plan
P2 Act EO 12856	<ul style="list-style-type: none"> ▪ P2 Program Plan
Clean Air Act	<ul style="list-style-type: none"> ▪ Air Emissions Inventory ▪ ODC Elimination Plan ▪ P2 Program Plan
Clean Water Act	<ul style="list-style-type: none"> ▪ Stormwater P2 Plan
Toxic Substances Control Act	<ul style="list-style-type: none"> ▪ PCB SOP
Oil Pollution Act	<ul style="list-style-type: none"> ▪ Integrated Contingency Plan
EO 13101	<ul style="list-style-type: none"> ▪ P2 Program Plan ▪ Affirmative Procurement Policy Plan
EO 13123	<ul style="list-style-type: none"> ▪ P2 Program Plan

MANAGEMENT APPROACH. The Command provides environmental program emphasis through plans, Standing Operating Procedures (SOPs) and public events that communicate the Army's commitment to uphold environmental regulations.

The Command and ENRD work together to set P2 goals and to establish programs like centralized hazardous material management, integrated solid waste management and affirmative procurement. The Command also

champions the P2 efforts derived from the teamwork of ENRD and many installation activities, resulting in programs that are part of the installation's culture and are transferable to private or public sector organizations.

Partnering From Within

INTERNAL PARTNER	PROJECT
ENRD	Hazmart, Paint Facility
Directorate of Logistics	Hazmart, Recycling Center
Internal Review and Audit	Affirmative Procurement
Directorate of Contracting	Integrated Contingency Plan
Fire and Emergency Services	Recycling
Morale, Welfare and Recreation	Parts Cleaning, Paint Facility
7 th Transportation Group	Training
Directorate of Plans, Training, Mobilization & Security	

PROGRAM SUMMARY

FORT EUSTIS 1999-2000 P2 GOALS

- GOAL 1. Support the installation mission through training and infrastructure improvement.
- GOAL 2. Integrate P2 in every program area.
- GOAL 3. Increase emphasis on internal and external communication.
- GOAL 4. Strengthen P2 through comprehensive, long-term planning.

P2 GOALS. Fort Eustis was one of the first Army installations to prepare a P2 Plan. The 1993 plan was completed prior to Executive Order 12856, which mandated the preparation of Federal P2 plans. The P2 plan's third edition, completed in May 1999, supports planning through an information baseline of

material usage and waste generation, a description of management practices and P2 opportunities.

Pollution Prevention Report Card

Baseline	
Hazardous Waste	243,787 lbs (CY 95)
Ethylene Glycol (TRI)	27,180 lbs (CY 95)
Chlorine (TRI)	14,600 lbs (CY 95)
ODCs	5,403 lbs (CY 93)
# of Transformers	90 (CY 93)
(PCB/PCB Contaminated)	790 (FY 95)
USTs	

1999-00	
Hazardous Waste	163,997 lbs (CY 99)
Ethylene Glycol (TRI)	3,000 lbs (CY 99)
Chlorine (TRI)	0 lbs (CY 99)
ODCs	1,263 lbs (FY 00)
# of PCB/PCBC Transformers	0 (FY 00)
USTs	360 (FY 00)

Reductions Achieved to Date

Hazardous Waste	33%*
Ethylene Glycol (TRI)	85%*
Chlorine (TRI)	100%*
ODCs	77%
# of PCB/PCBC Transformers	100%
USTs Eliminated	55%

*** As a result of reductions in the waste streams and/or chemicals, Fort Eustis realized a cost avoidance of \$221,282.**



ENRD ensures that all publications contain current information to enhance environmental awareness.

OUTSTANDING PROGRAM FEATURES

GOAL 1. MISSION SUPPORT

MILESTONE: Increase number of soldiers trained and reduce hazardous materials management time for soldiers.

MILESTONE: Improve quality of training areas and soldier work areas.

Mission readiness while maintaining environmental compliance through P2 is a top priority. ENRD cultivated a productive work environment for the soldiers through streamlined operating procedures, training and infrastructure improvements.

MILESTONES MET:

- ▶ Streamlined procedures for hazardous material procurement through the Hazmart, reducing soldier task time by 71%.
- ▶ Initiated training for 263 Recycling Coordinators.

Since 1997 the Hazmart has improved the soldiers' ability to procure hazardous materials efficiently, while tracking environmentally

preferable purchases.

ENRD also consolidated most environmental training into a semi-annual hazardous waste coordinator's course using the Hazardous Material and Waste Management SOP. During FY 2000 181 Activity Environmental Coordinators received training, and ENRD developed new training for Activity Recycling Coordinators.

The installation enhanced the maintenance of 7 of 25 training areas by using wood wastes ground into mulch to refurbish non-paved training roads. These mitigation measures

encompass 3 miles of training road using over 3,500 cubic yards of material diverted from the waste stream.

MILESTONES MET:

- ▶ Enhanced 28% of the training areas during CY 2000
- ▶ Performed boiler plant modernization.

During FY 99-00, boiler plant modernization and the use of infrared heaters in hangars improved the quality of the soldiers' work surroundings by providing more efficient temperature control in maintenance bays and reducing air emissions.

GOAL 2: INTEGRATION

MILESTONE: Integrate recycling into solid waste management operations.

MILESTONE: Develop an Integrated Contingency Plan.

The installation is a leader in program integration. One example is the FY 99 implementation of the integrated solid waste management program (ISWMP). This approach centrally manages trash disposal, recycling, yard wastes, hazardous wastes and affirmative procurement.

Fort Eustis is the first Virginia DoD installation

MILESTONES MET:

- ▶ ENRD assumed responsibility for management of Recycle Center in March 2000.
- ▶ Final draft of ICP received in Sept 2000.

to develop an Integrated Contingency Plan (ICP). The ICP combines seven plans into one, incorporating Federal and state

requirements. This includes the Fort Eustis Facility Response Plan, Fort Eustis Spill Prevention, Control and Countermeasures Plan (SPCC), Fort Story SPCC, Fort Story Spill

Contingency Plan, Fuel Barge Contingency Plan, Oil Spill Discharge Contingency Plan and Fort Eustis/Story Hazardous Waste Contingency Plan. The advantages include ease of management, ease of use by installation response and ease of inspection by Federal and state regulators and Army inspectors. By CY 01, personnel will be able to access the ICP on the ENRD website at <https://www.dpw-web.eustis.army.mil/ENRD/ENRDhome/index.htm>.

GOAL 3: COMMUNICATION

MILESTONE: Develop website to increase awareness.

MILESTONE: Sponsor two events to promote recycling and affirmative procurement.

Effective communication is essential to the P2 program. Electronic media enabled personnel to access installation policies in all environmental areas, but especially P2. In FY 00, the P2 Branch developed a website with contact information for environmental personnel, details on spill prevention, compliance through prevention, and affirmative procurement. A web-based affirmative procurement training course has been developed and will be online in CY 01.

The use of e-mail, training, and promotional events like the annual Commander's Environmental Excellence Awards Ceremony, Earth Week, Clean Your Files Day and America Recycles Day help to keep P2 in the forefront.

MILESTONES MET:

- Developed a website to improve internal communications during CY 00.
- Sponsored Earth Day and America Recycles Day events reaching more than 1,000 people over 2 years.

GOAL 4: PLANNING

MILESTONE: Use life cycle cost analysis in P2 project justifications.

MILESTONE: Integrate sustainable design and development into at least one construction project.

ENRD used life cycle cost analysis to compete for funds for construction of the Hazmart and the new Recycling Center. These techniques were also used to procure 33 solvent sinks, 20 aqueous parts washers, and 8 antifreeze recyclers.

During CY 00, ENRD initiated use of "green construction" techniques. Sustainable design pilot projects that focus on construction materials with recycled content, energy and water conservation are now in place for renovation of the 5,500-square foot Fort Eustis

MILESTONE MET:

- Sustainable Design incorporated into renovation of over 5,700 square feet in September 2000.

Solid Waste Collection Center and the 288-square foot Fort Story Hazardous Waste office.

DOLLAR WISE

The new Recycle Center, completed in March 1999 used TRADOC venture capital funds of \$409,000 and had paid back 74% of the investment by December 2000. The Hazmart repaid 100% of \$224,000 in TRADOC venture capital funding within 8 months.

ACCOMPLISHMENTS

Material Substitution

Environmentally Preferable (EP) Purchasing. The installation began tracking EP purchases through the Hazmart in October 1999.

Products must meet GreenSeal standards as a recommended or certified product in order to qualify as EP. Examples of these products include re-refined oil, paints, and some cleaners.



Pollution Buster

20% of Hazmart purchases are environmentally preferable.

Polychlorinated Biphenyls (PCBs) – An extensive FY 99-00 survey/replacement of electrical transformers has prevented future contamination, decreased potential clean up costs (clean-up of PCB-contaminated sites at Fort Eustis totaled \$4,394,400) and provided efficient energy use by replacing 50-year-old transformers with state-of-the-art equipment.

Ozone-Depleting Chemicals (ODCs) - ENRD performed an ODC survey in June 1999 identifying 1,263 pounds of Class 1 ODCs remaining in use. The installation has already eliminated over 4,000 pounds of ODCs and will easily eliminate all Class I ODCs by 2003.

Process Improvement

Wastewater Treatment. This mammoth undertaking has changed the way Fort Eustis treats wastewater. The installation connected



Pre-treatment of bilge wastes at Third Port has helped to reduce water usage.

to the local sanitary pipeline, Hampton Roads Sanitation District (HRSD) in October 1999

at an estimated cost of \$2.9 million, rather than building a new plant (\$20 million) or upgrading the existing plant (\$11 million).

This project also involved improvements totaling \$5 million to the wastewater collection system (WWCS) and construction of a bilge waste pre-treatment facility. The WWCS eliminated groundwater infiltration, which lessened the quantity of wastewater requiring treatment by 0.8 million gallons per day. This action reduced treatment costs by 45% per



Pollution Buster

Improvements to WWCS:

✓ reduced treatment costs by 46% per 1,000 gallons,

✓ eliminated requirement for chlorine.

1,000 gallons for an annual savings of \$346K. A related \$1.6 million project to rehabilitate sewer lines at Fort Story began in June 2000. At completion,

this will also eliminate groundwater infiltration and reduce the wastewater flow by approximately 4.5 million gallons per month.

Chemical Tracking. Both material and waste tracking has significantly improved over the last two years. The Hazmart can track most hazardous material purchases, enabling ENRD to use Hazmart records for EPCRA reporting. The hazardous waste tracking system standardized material profiles for waste streams across multiple years, providing more accurate information for regulatory reports and P2 decisions.



The Hazmart will perform future cylinder management using a database developed by ENRD.

Concern for EPCRA report accuracy led to performance of an audit of compressed gas

cylinders on the installation. Of the 1,516 cylinders surveyed, 1,377 remained in service, while 139 (9%) were turned in for reuse, recycling or disposal. Some cylinders contained acetylene, which was recovered prior to recycling the metal canister.

Equipment SOPs. The P2 staff developed SOPs that were more user-friendly than the complex standard equipment documentation to assist soldiers in operating and maintaining P2 equipment, such as solvent sinks, aqueous parts washers, and antifreeze recyclers.

Material Management

The installation began centralized hazardous materials management in 1995 by establishing the Hazmart, gradually expanding and refining the program. The Hazmart, through a partnership with the Navy Fleet and Industrial Supply Center, also provides a brokering service through its Reuse Center to find a home for excess materials, resulting in fewer unnecessary hazardous materials purchases.



Pollution Buster

Fort Eustis saved \$85.5K in free issue materials and \$97.1 K in waste disposal in FY 99 as a result of Reuse Center brokering.



Fort Eustis military units recycled their antifreeze.

Calendar year 1999 was the first year that the installation was not required to submit a Toxic Release Inventory (TRI) report because the chemicals had either been eliminated or volume fell below the reportable thresholds. The installation credits recycling and better material management through the Hazmart for this reduction. Ethylene glycol (antifreeze) was

reduced to below the 10,000-pound threshold and chlorine was eliminated.

Recycling

Recycling program. The recycling program transcended its stand-alone role to become part of an integrated solid waste management program. The Internal Review and Audit Compliance (IRAC) office performed a 1999 study that persuaded the Command to consolidate the operation of the 9,000 square foot state-of-the-art recycle center under ENRD, who managed all other solid wastes.

ENRD initiated contracts for family housing recycling at both installations. The Fort Story contract additionally covered administrative buildings, enabling the remaining recycling staff to focus on Fort Eustis recyclables. Through dumpster monitoring, distribution of information (e-mail, videos, phone calls, training) and Command support, the staff achieved a 16% increase in recycling from FY 98 to FY 00 and a disposal cost avoidance of \$550,620 in FY 99-00.



Pollution Buster

In CY 2000 Fort Eustis exceeded the Federal goal of 35% waste diversion by 2004!

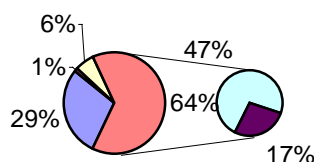
The integration of the program enables the installation to explore other waste diversion opportunities. For example, the installation increased the number of rubber tires being recycled by 170% since FY 98. The wood chipping operations began in CY 99, producing more than 958 tons of mulch used in training areas and landscaping. ENRD also implemented a consolidated database to ensure consistency and accuracy in solid waste statistics.

The staff implemented suggestions from the solid waste study for increasing installation waste awareness. ENRD developed and

implemented training for 263 recycling coordinators at Forts Eustis and Story and placed colorful labels on all dumpsters indicating what the dumpsters should contain. ENRD also produced two solid waste management videos in FY99. One video was distributed widely to soldiers and civilians working at the installations. The other video is for family housing occupants, who must view the video before participation in the Self-Help program.

ENRD staff also designed refrigerator magnets with telephone numbers for trash pick-up, recycling, and household chemical disposal. Girl Scouts distributed these magnets, along with energy conservation brochures and recycling coloring books to 1,102 family housing units at both installations.

FY00 Waste Diversion & Energy Recovery



Recyclables Paper, Cardboard, Aluminum Cans, Scrap Metal	(29% Recycled/2338 tons)
Tires	(1% Recycled/108 tons)
Wood, Limbs, Stumps, Pallets	(6% Recycled/467 tons)
Dumpsters	(47% Waste to Energy Recovery/3811 tons)
Dumpsters	(17% Landfill/1401 tons)

Affirmative Procurement Program Policy

A stunning success of the last two years is the development and implementation of a written Affirmative Procurement Program Policy in support of EO 13101. The Chief of Staff signed the policy in March 2000.

ENRD staff uses e-mail to promote the policy and the “Green Purchasing” website. This site provides extensive and timely information on

compliance with the policy, and links to EPA, DOD, and Army sites. The Directorate of Peninsula Contracting (DPC) reinforces the requirement in classes for over 650 VISA IMPAC cardholders, including the fact sheet prepared by ENRD on “Buying Recycled at

Fort Eustis and Fort Story”. Additionally, DPC incorporated clauses from the Federal Acquisition Regulation into contract solicitations.



All VISA IMPAC cardholders receive affirmative procurement training as part of their credit card training.

Earth Week events promote affirmative procurement aggressively. The installation also participates in America Recycles

Day with displays at the Post Exchange, Commissary and Recycling Center promoting products with recycled content and positive environmental attributes according to EPA’s Comprehensive Procurement Guidelines.

ENRD actively monitors the affirmative procurement program. In June 2000, staff conducted the first annual telephone survey of 75 installation personnel representing 43 organizations. The survey revealed that 69% of respondents were fully or somewhat aware of affirmative procurement requirements.



BG Mortensen signs the Environmental Stewardship Proclamation during Earth Week 2000.

Education, Outreach and Partnering

Events. Annual Earth Week activities promote affirmative procurement, feature prevention training, and recognize individuals and

activities for their commitments to waste prevention.

Earth Week 1999 honored more than 100 Hazardous Waste and Activity Environmental Coordinators.

ENRD held spill training for 32 soldiers and fire department personnel, as well as special equipment training for 16 soldiers. Earth Week 2000 recognized 263 Recycling Coordinators



ENRD staff encourage 250 participants in Earth Week 2000 to "Help Us Close the Loop" on recycling, sung to the tune of "Old MacDonald".

and three activities as well as 26 special education students and students from Dozier Middle School and New Horizons Regional Education Center who sort recyclables during the school year.



Local special education students augment the Recycling Center staff during the school year.

Partnerships. The installation participates in the Virginia DEQ-DoD Partnership to promote cooperation and P2 information exchange and in Virginia Naturally, Virginia's official environmental education initiative. The installation is involved with local schools through Earth Week tours of the installation's nature trail and the annual Grocery Bag Project, in which local youth decorate more than 3,000 bags with Earth Day messages distributed at the Commissary during Earth Week.

Fort Eustis continues inter-service cooperation through the Army-Navy partnership at the installation Hazmart, which provides centralized hazardous materials management. The Hazmart has expanded during the past two years now serves a population of over 25,000 including Naval Weapons Station Yorktown, Fort Lee and Fort Monroe.

Technology Demonstration

Paint Booth Demonstration - A Pollution Prevention Opportunity Assessment (PPOA) conducted in CY 99 conducted by the U.S. Army's Industrial Operations Command (IOC) focused on tactical painting process improvements. Tactical vehicle painting was responsible for 25% of the total paint and paint-related waste generated during CY99.

Fort Eustis has two paint booths annually servicing 1,600 ground vehicles, helicopters, and components belonging mostly to the 7th



Causeways are critical to the training mission.

Transportation Group. The booths are too small to accommodate today's 40-ton cranes (over 80 feet long), Rough Terrain Container Handlers (20

feet wide and 14 feet high) and modular causeway sections.

Consequently, outdoor painting occurs, resulting in a paint transfer efficiency of only 40% compared to 60% indoors. Outdoor painting requires 20% more paint, primer, and thinner (about 233 gallons) at an added cost of over \$8,000 annually to duplicate indoor efficiency. This additional material also generates the release of 955 lbs. of volatile organic compounds and 1,195 lbs. of particulates. The installation also loses an estimated 86 production days due to bad weather and unfavorable temperature and humidity. To correct this and improve readiness, the installation considered either building a new paint facility or sending its equipment to a local vendor. IRAC supervised a net present value (NPV) economic analysis, evaluating the differences in life-cycle cost

between the two options over a 25-year period. It favored building a new facility with a NPV cost of \$18,450,000 (includes construction, operating costs, and equipment replacement) compared to \$41,936,472 for sending the work to a commercial vendor. This \$23 million savings will be used to justify an MCA project request for a new facility. The design action team included soldiers from 7th Group and civilian representatives from environment, safety, industrial hygiene, and logistics, ensuring that all concerns were incorporated.



Pollution Buster

A PPOA, economic analysis, and a design for a new paint facility pave the way to eliminate 233 gallons of paint and paint-related materials, 955 lbs. of VOCs and 1,195 lbs. of particulates from tactical vehicle painting.

Energy Initiatives. Fort Eustis began modernizing 13 central heating plants in the 1990s. According to the Army Audit Agency, the total investment will be \$11.2 million and recurring savings during FY 00-03 should total about \$3.2 million with a total cost avoidance of \$17.3 million over the 25-year life of the heating plant system. Six 20,000-gallon underground storage tanks were removed through this project, eliminating 120,000 gallons of fuel oil, saving energy and improving environmental quality.

In addition to heating plant modernization, other energy efficiency improvements were made in buildings serviced by these heating plants. For example, Fort Eustis obtained Energy Conservation Investment Program and BOLD Grant funds to install HVAC systems using geothermal heating and cooling, infrared radiant heating in high bay training areas, and efficient metal halide lighting for a bunker training area and warehouse. Building 2716, the site of year-round day and evening classes, will save energy by turning on only the number

of heat pumps needed instead of operating a large central boiler.

Summary

The achievements enabling Forts Eustis and Story soldiers and civilians to execute their missions are the result of dedicated individuals united to make a positive difference. For many, the blending of mission and prevention has become second nature. These are the people whose collective efforts set the stage for long-term success of Fort Eustis's P2 program.

